MEAS Modernizing Extension and Advisory Services

Technical Note on

Creating Concept Maps

Introduction

Concept maps are one way to make content easier for learners to process and understand. These instructional tools are a great way to simplify information by allowing learners to visualize complex processes, and they also engage learners' creativity and higher order thinking skills.

What are Concept Maps?

Concept maps simplify complex information by showing relationships using lines and boxes. Regardless of the type of information being presented, all concept maps have a central idea. Depending on the relationship type, a concept map can illustrate a sequence of events, a cycle or steps in a process. They are visually appealing and convey information quickly.

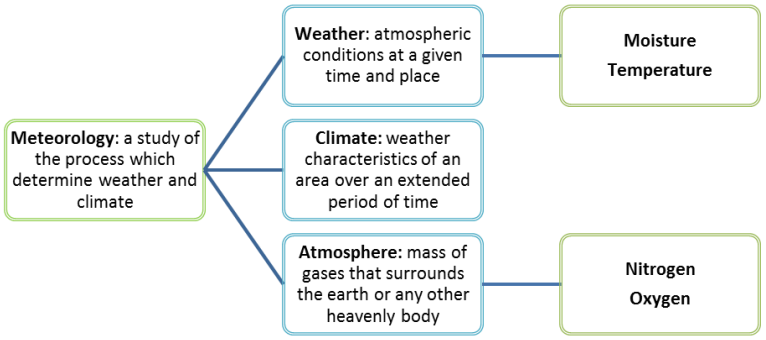
Types of Concept Maps

The format of the concept map will be influenced by the type of information in the presentation. Concepts that require classification need a map that shows categorization. Maps for processes or sequencing have to allow for stages and substages. Cause-and-effect relationships require a map that demonstrates multiflow organization.

Classification Maps

A classification map organizes ideas into categories or groups. This type of map arranges information into levels according to importance, size or attributes. Creating a classification map involves identifying the main category, the subcategories and any further necessary information. This type of map illustrates the hierarchical classification of subjects; it indicates which information is most important. This type of map can be useful for taxonomy or breed origins, or even to compare and contrast. Useful questions for constructing classification maps include: what is the main idea; what are the subcategories or subgroups; and is there any information that can be put into groups? The classification map in Figure 1 depicts three major subcategories (weather, climate, atmosphere) of the larger concept of meteorology. The subcategories of weather and atmosphere are further described by the variables included in each.

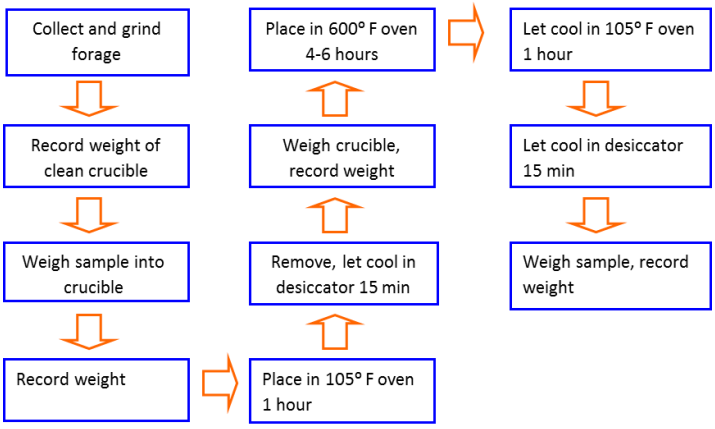
Figure 1. (Classification map) Definition - climate and weather



Flow Maps

Flow maps graphically depict a sequence of events in order. They can be used to represent complex processes, and they can help learners identify various stages and substages of an event. Among the subjects that can best be illustrated through a flow map are how-to demonstrations, environmental cycles and steps for a laboratory analysis. Questions to consider in constructing a flow map include: what is the main idea or event; what are the substages of the event; and are there any other relationships between the stages and substages? The flow map depicted in Figure 2 describes the process for determining dry matter weight of a forage crop. To make this determination, a learner just needs to follow the process step-by-step. This type of concept map works well with procedures such as this that require processes to be done in a specific order.

Figure 2. (Flow map) How to determine dry matter weight



This Technical Note is from a series on Effective Teaching and Learning. Modernizing an extension and advisory services system in any location requires competent field agents and others who know and/or have access to content needed at the local level and are able to teach that content using proven teaching strategies and methodology. These technical papers should be utilized by anyone involved in the training of extension professionals.

Designed to be Shared

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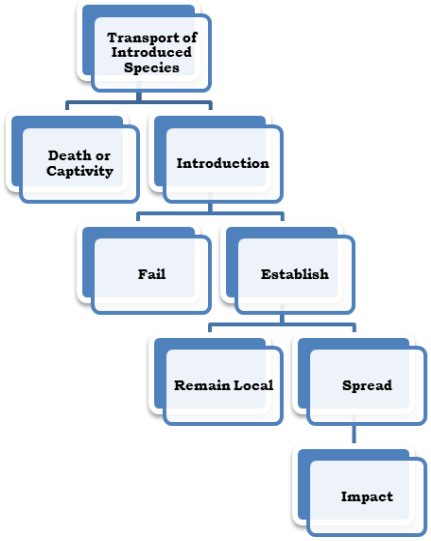
Multiflow Maps

Often learners easily understand simple one-to-one cause/effect relationships but tend to get lost when multiple outcomes result from multiple influences. Multiflow maps help simplify a complex cause/effect relationship by representing one central event with causes and effects depicted on each side. Multiflow maps can be used for subjects such as animal nervousness, weight gain or the weather. Questions to consider in constructing a multiflow map include: what are the causes and effects of this event; which causes relate to which effects; and which causes and effects are most important?

The concept map in Figure 3 is a multiflow map describing the invasive species process to establishment. As the learner reads down through the map, it highlights the decision points in the process. When an invasive species is introduced, one of two things happens: the species dies or is captured, or the species is introduced into the environment. The introduced species then either establishes itself or fails to establish itself. Thus by looking at this concept map, a reader can deduce that, to control invasive species, people need to encourage the options on the left side of each decision.

Figure 3 (Multiflow map) Invasive species -- process to establishment



Compare and Contrast

A compare and contrast map can be used to summarize information about differences and similarities, and to analyze the positive and negative aspects of two issues or topics. Questions to consider in constructing compare/contrast maps include: what things are being compared; what are the attributes of each; and how can the similarities and differences be evaluated?

Photo Credits: *Burt on E. Swanson, taken in Ethiopia in 2010*

Figure 4 (Compare and contrast) Produce

	Corn	Potato
Origin	Mesopotamia	South America
Growing season	Summer	Summer
Common uses	Food production and biofuel	Food production
Growth type	Above ground	Tuberous

The compare and contrast map in Figure 4 provides a clear and simple means to organize the characteristics of two or more items -- in this case, food crops -- and determine how they are similar and different. A quick glance at this concept map reveals to the reader that corn and potatoes share a common growing season and some common uses and that the crop origins and growth type differ.

Purpose of Concept Mapping

Information is traditionally presented in printed text, with only words to describe the relationship between two or more things. This type of presentation can be monotonous and daunting to some learners. Concept maps help learners visualize connections that may not appear during reading. Besides simplifying printed information, they make learning more interesting and enjoyable.

Concept maps have several benefits. When they are developed properly, using them addresses multiple learning styles. They allow instructors to present information in a format that facilitates knowledge and thinking while using it as a learning tool for a learner-centered activity. Another benefit is the positive influence that concept maps have on retention of new knowledge. This benefit may accommodate the visual learner most of all, but most people appreciate the clarity of seeing relationships between two ideas.

Summary

Concept maps are great tools for any learning environment regardless of content or topic area. Both learners and instructors benefit from utilizing concept maps because they are easy for instructors to prepare and easy for learners to comprehend. Using visual tools to engage learners thus is an effective approach. This type of teaching tool can be used for various learning or instructing styles. This is a great way to improve the presentation of any subject matter.

Resources

- Johnson, Steve A. *Wildlife Invasions in Florida*. UF/FAAE Conference, Gainesville, Florida, January 26, 2008: Figure 3
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- Silver, H.F., R.W. Strong and M.J. Perini. 2007. *The strategic teacher: Selecting the right research-based strategy for every lesson*. Alexandria, Va.: ASCD.

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